its Rectilinear Sides, did when produced paſs exactly through the middle of that white round Image S. And when the Refraction of the ſecond Priſm was equal to the Refraction of the firſt, the refracting Angles of them both being about 60 degrees, the Axis of the Spectrum $3p\,3t$ made by that Refraction, did when produced paſs alſo through the middle of the ſame white round Image S. But when the Refraction of the ſecond Priſm was leſs than that of the firſt, the produced Axes of the Spectrums tp or $2t\,2p$ made by that Refraction did cut the produced Axis of the Spectrum TP in the Points m and n, a little beyond the Center of that white round Image S. Whence the Proportion of the Line $3t$T to the Line $3p$P was a little greater than the Proportion of $2t$T to $2p$P, and this Proportion a little greater than that of tT to pP. Now when the Light of the Spectrum P T falls perpendicularly upon the Wall, thoſe Lines $3t$T, $3p$P, and $2t$T, $2p$P and tT, pP, are the Tangents of the Refractions; and therefore by this Experiment the Proportions of the Tangents of the Refractions are obtained, from whence the Proportions of the Sines being derived, they come out equal, ſo far as by viewing the Spectrums and uſing ſome Mathematical reaſoning I could Eſtimate. For I did not make an Accurate Computation. So then the Propoſition holds true in every Ray apart, ſo far as appears by Experiment. And that it is accurately true may be demonſtrated upon this Suppoſition, *That Bodies refract Light by acting upon its Rays in Lines Perpendicular to their Surfaces.* But in order to this Demonſtration, I muſt diſtinguiſh the Motion of every Ray into two Motions, the one Perpendicular to the refracting Surface, the other Parallel to it, and concerning the Perpendicular Motion lay down the following Propoſition.

If

If any Motion or moving thing whatſoever be incident with any velocity on any broad and thin Space terminated on both ſides by two Parallel Planes, and in its paſſage through that ſpace be urged perpendicularly towards the further Plane by any force which at given diſtances from the Plane is of given quantities; the perpendicular Velocity of that Motion or Thing, at its emerging out of that ſpace, ſhall be always equal to the Square Root of the Summ of the Square of the perpendicular Velocity of that Motion or Thing at its Incidence on that ſpace; and of the Square of the perpendicular Velocity which that Motion or Thing would have at its Emergence, if at its Incidence its perpendicular Velocity was infinitely little.

And the ſame Propoſition holds true of any Motion or Thing perpendicularly retarded in its paſſage through that ſpace, if inſtead of the Summ of the two Squares you take their difference. The Demonſtration Mathematicians will eaſily find out, and therefore I ſhall not trouble the Reader with it.

Suppoſe now that a Ray coming moſt obliquely in the Line MC be refracted at C by the Plane RS into the Line CN, and if it be required to find the Line CE into which any other Ray AC ſhall be refracted; let MC, AD, be the Sines of incidence of the two Rays, and NG, EF, their Sines of Refraction, and let the equal Motions of the Incident Rays be repreſented by the equal Lines M C and AC, and the Motion MC being conſidered as parallel to the refracting Plane, let the other Motion AC be diſtinguiſhed into two Motions AD and DC, one of which AD is parallel, and the other DC perpendicular to the refracting Surface. In like manner, let the Motions of the emering Rays be diſtinguiſh'd into two, whereof the per- *Fig.* 1.

H pendicular

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